

WHAT IS CLAIMED IS:

59
C17

1. A device for loading a fluid into a syringe comprising a body having a plunger slidably disposed therein and an attachment mechanism associated with the body for attaching the syringe to an injector comprising a mounting mechanism adapted to cooperate with the attachment mechanism on the syringe to mount the syringe on the injector, the device comprising:

a syringe mounting mechanism adapted to cooperate with the attachment mechanism of the syringe to attach the syringe to the device; and

a drive member adapted to impart motion to the syringe plunger.

2. The device of Claim 1 wherein the drive member comprises a flange on a rearward end thereof that is manually operated by a user during loading.

3. The device of Claim 1 wherein the drive member is linked to a lever arm, the lever arm being movable to impart reciprocal linear motion to the syringe plunger.

4. The device of Claim 1, further comprising a source of motive power for powering the drive member.

5. The device of Claim 4 wherein the source of motive power comprises a powered screw drive.

6. The device of Claim 1 wherein the drive member comprises ratchet teeth and the device further comprises a rotating handle that is rotatable about an axis, the rotating handle having attached thereto on a first side of the axis a first pawl, the rotating handle having attached thereto on a second side of the axis a second pawl.

7. The device of Claim 6, further comprising a mechanism to move only one of the first pawl and the second pawl into cooperation with the ratchet teeth of the drive member at a given time.

8. The device of Claim 7 whereby rotation of the handle in a first direction causes forward movement of the drive member when the first pawl is brought into cooperation with the ratchet teeth and rotation of the handle in the first direction causes rearward movement of the drive member when the second pawl is brought into cooperation with the ratchet teeth.

9. The device of Claim 8 wherein the rotating handle is biased in a second direction, opposite of the first direction.

10. The device of Claim 1, further comprising a support frame defining a first slot therein, the lever arm being rotatably connected to the drive member via a first pin positioned intermediate between the forward end and the rearward end of the lever arm, the first pin traveling in the first slot during rotation of the lever arm.

11. The device of claim 10 wherein the support frame further defines a second slot therein, the lever arm having a second pin attached thereto at a position forward of the position of the first pin, the second pin traveling in the second slot during rotation of the lever arm.

12. The device of Claim 11, further comprising a mount that is attachable to a surface.

13. The device of Claim 12 wherein the support frame is removably attachable to the mount.

14. A method of preparing a syringe for connection to an injector, the method comprising:

connecting a syringe to a syringe loader;
connecting a fluid source to the syringe;
loading fluid from the fluid source into the syringe;
disconnecting the fluid source from the syringe;
disconnecting the syringe from the syringe loader; and
connecting the syringe to the injector.

15. The method of Claim 14, further comprising:
mounting the syringe loader on a surface.

16. The method of Claim 14 wherein the loading step comprises retracting a plunger within the syringe.

17. The method of Claim 14 wherein the loading step comprises pressurizing the fluid source to force fluid into the syringe.

18. A system comprising:
a syringe;

a powered injector to pressurize a fluid loaded into the syringe; and
a syringe loader to load the fluid into the syringe.

19. The system of Claim 18 wherein the syringe loader is operable independent of the powered injector.

20. A system of Claim 18 wherein the syringe comprises a syringe plunger slidably disposed therein and an attachment mechanism for attachment of the syringe to the powered injector, the powered injector comprises a mounting mechanism adapted to cooperate with the attachment mechanism on the syringe to mount the syringe on the injector, and the

syringe loader comprises a syringe mounting mechanism adapted to cooperate with the attachment mechanism of the syringe to attach the syringe to the syringe loader and a drive member adapted to impart motion to the syringe plunger.

21. The system of Claim 20 wherein the drive member comprises a flange on a rearward end thereof that is manually operated by a user during loading.

22. The system of Claim 20 wherein the drive member is linked to a lever arm, the lever arm being rotatable about an axis to impart reciprocal linear motion to the syringe plunger.

23. The system of Claim 20, further comprising a source of motive power for powering the drive member.

24. The system of Claim 23 wherein the source of motive power comprises a powered screw drive.

25. The system of Claim 20 wherein the drive member comprises ratchet teeth and the syringe loader further comprises a rotating handle that is rotatable about an axis, the rotating handle having attached thereto on a first side of the axis a first pawl, the syringe handle having attached thereto on a second side of the axis a second pawl.

26. The system of Claim 25 wherein the syringe loader further comprises a mechanism to bring only one of the first pawl and the second pawl into cooperation with the ratchet teeth of the drive member at a given time.

27. The system of Claim 26 whereby rotation of the handle in a first direction causes forward movement of the drive member when the first pawl is brought into cooperation

with the ratchet teeth and rotation of the handle in the first direction causes rearward movement of the drive member when the second pawl is brought into cooperation with the ratchet teeth.

28. The system of Claim 27 wherein the rotating handle is biased in a second direction, opposite of the first direction.

29. The system of Claim 18 wherein the syringe comprises a syringe tip from which pressurized injection fluid exits the syringe during an injection procedure, the syringe loader comprising a connector to connect in fluid connection a source of injection fluid and the syringe tip, the connector comprising a first connection mechanism to connect the connector to the syringe tip, a second connection mechanism to connect the connector to the source of injection fluid, a valve to open and close the fluid connection between the source of injection fluid and the syringe tip and an inlet between the valve and the second connection mechanism, the inlet adapted to pass a pressurized gas into the source of injection fluid when the valve is closed.

30. The system of claim 29 wherein the valve is openable after pressurized gas is passed into the source of injection fluid so that injection fluid is forced into the syringe via the syringe tip by the pressurized gas within the source of injection fluid.

31. The system of Claim 29 wherein the syringe loader further comprises an air pump in fluid connection with the inlet to pass pressurized air into the source of injection fluid.

32. The system of Claim 31 wherein the air pump comprises a ball pump in fluid connection with a bladder.

33. The system of Claim 18, further comprising a control unit operably associated with the syringe loader and the injector.

34. A syringe loader for loading an injection fluid into a syringe comprising a syringe tip, the syringe loader comprising:

a connector to connect a source of injection fluid to the syringe tip, the connector comprising a first connection mechanism to connect to the syringe tip, a second connection mechanism to connect to the source of injection fluid, a valve to open and close the fluid connection between the source of injection fluid and the syringe tip and an inlet between the valve and the second connection mechanism, the inlet adapted to pass a pressurized gas into the source of injection fluid when the valve is closed.

35. The syringe loader of Claim 34 wherein the valve is openable after pressurized gas is passed into the source of injection fluid so that injection fluid is forced into the syringe via the syringe tip by the pressurized gas within the source of contrast fluid.

36. The syringe loader of Claim 34, further comprising an air pump in fluid connection with the inlet to pass pressurized air into the source of injection fluid.

37. The syringe loader of Claim 36 wherein the air pump comprises a ball pump in fluid connection with a bladder.